Date: April 16th, 2010

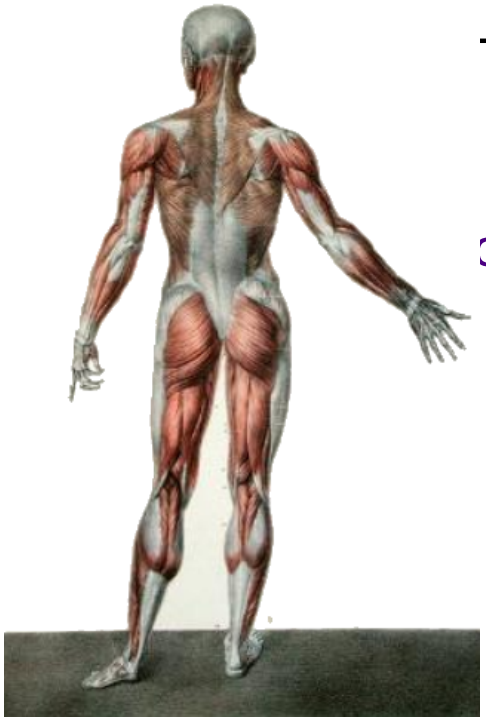
Title: Scientific Notation

Lesson Objective:
To understand how to write numbers in change numbers from **decimal (standard) notation** to **scientific notation** and vice versa.

IN:

1) How many zeros are in a thousand? a million? a billion? a trillion?

2) Take a guess! How many cells are there in the human body (approximately)?
   a) 50
   b) 50 thousand
   c) 50 million
   d) 50 trillion



There are approximately

50 TRILLION

cells in the human body!

If there are approximately 75,000 genes in ONE CELL, how many genes are in the human body?

Wow! That is **a lot** of zeros!!!

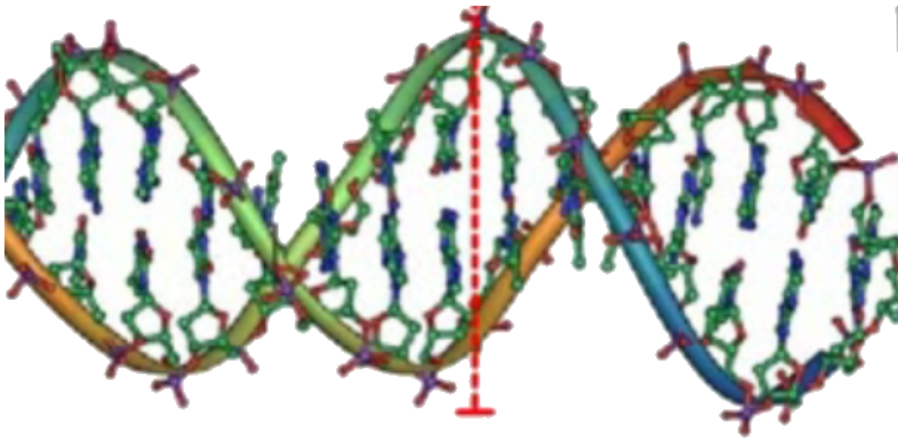
What if I don't want to write that many zeros?

What is a "compact" way of writing really big numbers?

SCIENTIFIC NOTATION

W2L:

What I remember about Scientific Notation from last year is...



Link!
(just watch!)

Consider these two lists of numbers:

What do you notice!?

In Scientific Notation	Not in Scientific Notation
3.4×10^5	27×10^4
7.04×10^3	120,000,000,000
6.023×10^{17}	4.683×12^5
8×10^1	42.682×10^{12}
1.6×10^2	$4^2 \times 10^2$
Add one!	Add one!
Add one!	Add one!

Classify each of these numbers as in scientific notation or not. If the number is NOT in scientific notation, tell why not:

4.7×10^{3} 1.107×10^{-13}

32×10^{5} 0.28×10^{0}

$2^{4} \times 10^{-6}$ 3.28×10^{0}

Y

N

Cloner!

W2L: For a number to be considered in "Scientific Notation" it must...

A number in Scientific Notation has the form of

$a \times 10^{n}$

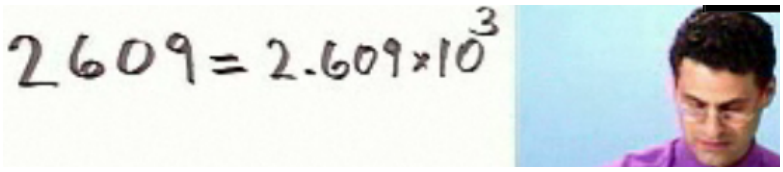
Where $1 \leq a < 10$ or $-10 < a \leq -1$

AND "n" is an integer

Write the formal definition in the work section of your notes!

Converting between **Decimal (standard)** and **Scientific Notation**!

Link!



Practice time!

Write each of the following in **scientific notation**!

1) 43,000

2) 567,000,000

3) 432

4) 8,980,000,000

Reverse it!

Write each of the following in **standard notation**!

5) 8.2×10^{5}

6) 5.42×10^{7}

7) 7.8×10^{3}

8) 3.21×10^{0}

9) 6.78×10^{10}

10) 4.0×10^{2}

What about really small numbers?

Write each of the following in **standard notation**!

5) 8.2×10^{-5}

6) 5.42×10^{-7}

7) 7.8×10^{-3}

8) 3.21×10^{0}

9) 6.78×10^{-10}

10) 4.0×10^{-2}

What about really small numbers?

Write each of the following in **scientific notation**!

1) 0.000043

2) 0.000567

3) 0.432

4) 0.000000000898

Make a table!

On the left, write five numbers that are in standard notation. (some big, some small)

On the right, create five numbers that are in scientific notation. (some big, some small)

Switch with your partner to fill out the missing pieces. Check each other's answers!

Standard Notation	Scientific Notation
5 numbers that are standard	
	5 numbers that are scientific

Out:

Write a set of instructions for converting 415,000,000 from standard notation to scientific notation.

CHOOSE ONE!

Write a set of instructions for converting 6.4×10^5 from scientific notation to standard notation.

Summary:

In scientific notation, the exponent on the 10 is related to the number in standard notation…